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(54) PRODUCTION OF PERMANENT MAGNET

(57)Abstract:

PURPOSE: To produce a permanent magnet having high coercive force and high maximum energy product with high productivity by employing a permanent magnet alloy, having a specific composition of R, boron, gallium and the remainder principally comprising iron, as a starting material and then crushing, pressing under magnetic field, and sintering the alloy.

CONSTITUTION: A permanent magnet alloy composed of 10-40wt.% of R (R represents at least one element selected from Y and rare earth elements), 0.1-8wt.% of boron, 13wt.% or less of gallium, and the remainder mainly comprising iron is employed as a starting material. 30wt.% or less of Co is also added to the permanent magnet alloy. 90wt.% or less of Ga is substituted by Al. The magnet alloy thus obtained (oxygen concentration is 0.05-0.03wt.%) is crushed roughly in Ar atmosphere and then crushed finely by a jet mill. The fine powder is filled in a predetermined die and

compression molded while applying magnetic field and then it is sintered in Ar atmosphere before it is subjected to aging in vacuum at 550–750° C.

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